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CARDIOVASCULAR FLASHLIGHT

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Ajmaline infusion during automated screening in Brugada syndrome and spontaneous Type 1 electrocardiogram unmasks non-suitability for subcutaneous implantable cardioverter-defibrillator

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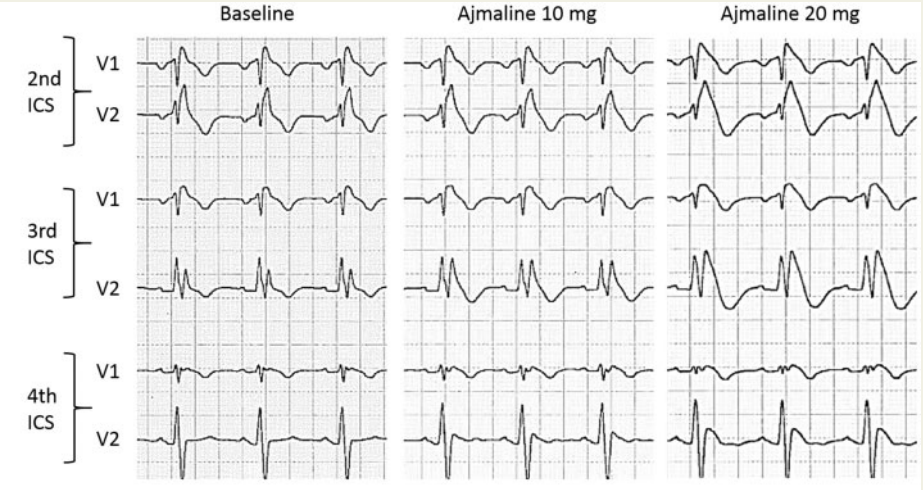
We present the case of a 52-year-old male with Brugada syndrome (BrS), who underwent dual-chamber implantable cardioverter-defibrillator (ICD) implantation in 2007 due to presence of spontaneous Type 1 electrocardiogram (ECG), family history of sudden cardiac death, and ventricular fibrillation induced by programmed ventricular stimulation. He was admitted to our department because of repetitive inappropriate ICD shocks due to non-cardiac oversensing, caused by fracture of the right ventricular lead. During follow-up, no sustained ventricular arrhythmias or need for bradycardia pacing were documented. Therefore, extraction of the fractured lead and implantation of a subcutaneous ICD (S-ICD) was planned and automated screening for S-ICD performed.

At baseline, the patient presented spontaneous Brugada Type 1 ECG and S-ICD screening deemed appropriate. However, in order to obtain maximal augmentation of the Brugada Type 1 ECG during the screening process, ajmaline was administered. After only 10 mg of ajmaline, J-point and ST-elevation a well as T-wave amplitude and morphology started to change gradually (see *Panel*, top) and secondary and alternate vectors failed the screening (see *Panel*, bottom). After 20 mg of ajmaline, none of the vectors were acceptable and drug infusion was discontinued. Based on these findings, strategy was changed and a transvenous ICD was implanted.

The value of ajmaline infusion with respect to S-ICD screening has been reported in patients with BrS and normal baseline ECG. Ajmaline administration could also be useful in BrS patients with spontaneous Type 1 ECG to evaluate appropriateness of S-ICD indication during maximal ECG changes and further avoid inappropriate shocks.



Lead	Supine	Standing /Sitting	Supine	Standing /Sitting	Supine	Standing /Sitting
Primary (Lead-III)	OK	OK	OK	OK	FAIL	FAIL
Secondary (Lead-II)	OK	FAIL	FAIL	FAIL	FAIL	FAIL
Alternate (Lead-I)	OK	OK	FAIL	FAIL	FAIL	FAIL

On top, one can appreciate the ECGs of precordial leads V1 and V2 placed at 2nd, 3rd, and 4th intercostal space (ICS) at baseline (left) and after infusion of 10 mg (middle) and 20 mg (right) of ajmaline. Note the changes in the QRS, J-point- and ST-elevation as well as T-wave amplitude and morphology. On the bottom, the corresponding screening results for the subcutaneous ICD (Boston Scientific, Natick, MA, USA) are depicted. Note that at baseline only the secondary vector fails the test, while standing/sitting, whereas the rest of the vectors are suitable for S-ICD implantation. After infusion of 10 mg of ajmaline also the alternate vector fails the screening test and after 20 mg of ajmaline none of the vectors remain acceptable for S-ICD implantation.